



## THE POTENTIAL FOR PARAMETRIC INSURANCE SOLUTIONS TO BUILD RESILIENCE FOR SMALLHOLDER FARMERS IN ZIMBABWE

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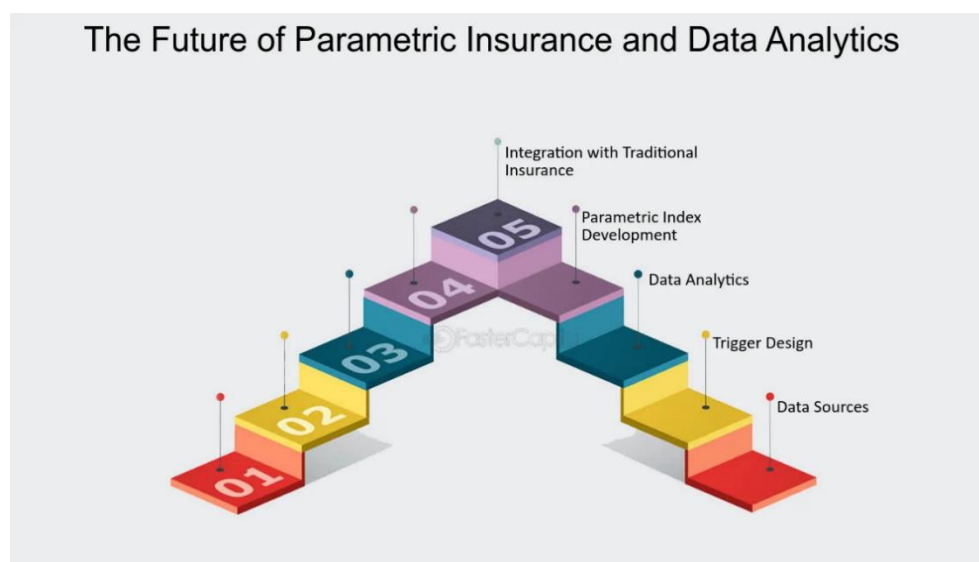
**ABSTRACT:** *This study explored the potential of parametric insurance solutions to enhance resilience among smallholder farmers in Zimbabwe, particularly in the context of climate change-related risks, such as droughts and floods. The aim was to evaluate the effectiveness and feasibility of parametric insurance as a risk management strategy for smallholder farmers, focusing on its potential to provide timely payouts based on predefined climate triggers. The purpose of the research was to understand how parametric insurance could offer a viable alternative to traditional insurance, which is often inaccessible for smallholders due to cost, complexity, and other barriers. The literature review highlighted the challenges that smallholder farmers in Zimbabwe face in accessing conventional agricultural insurance products, such as affordability, lack of awareness, and inadequate infrastructure. It also examined the advantages of parametric insurance, including its ability to deliver faster payouts linked to measurable climatic events, thus providing a more accessible and reliable safety net. A mixed-methods research approach was employed, combining qualitative and quantitative data collection techniques. The study utilized a cross-sectional research design and focused on a sample of 150 smallholder farmers in Zimbabwe, selected through purposive and random sampling methods. Data were collected through surveys, interviews, and focus group discussions with farmers, insurance providers, and agricultural experts. Ethical considerations included ensuring informed consent, voluntary participation, and the confidentiality of respondents. The main findings revealed that while parametric insurance held significant potential for improving resilience, several challenges hindered its adoption, including limited awareness, trust issues, and affordability concerns. The study concluded that for parametric insurance to be effective, policy interventions, increased awareness campaigns, and partnerships among key stakeholders were necessary. Recommendations included strengthening institutional frameworks and providing targeted education on parametric insurance to improve uptake.*

**KEYWORDS:** Parametric Insurance, Smallholder Farmers, Climate Resilience, Agricultural Risk Management.

## INTRODUCTION

Smallholder farmers in Zimbabwe have long been vulnerable to climate-related risks such as droughts, floods, and unpredictable rainfall patterns. These risks have been exacerbated by climate change, resulting in declining agricultural productivity and increased food insecurity for smallholder farmers (Nhamo et al., 2022). Many of these farmers face barriers to accessing conventional insurance due to high premiums, complex terms, and a lack of trust in formal insurance systems (Chikowore & Dube, 2023). The primary purpose of this study was to explore the potential of parametric insurance solutions to enhance resilience among smallholder farmers in Zimbabwe. Parametric insurance, which triggers payouts based on predefined climatic events, emerged as a potentially accessible alternative to traditional insurance, offering a quicker response to climate disasters and thereby mitigating the financial impact on smallholder farmers (Matamanda et al., 2021). This study aimed to assess how effectively parametric insurance could provide financial support to farmers during adverse weather conditions, and what factors influenced its adoption.

Most studies on agricultural insurance in Zimbabwe had focused on traditional models that were unsuitable for smallholders due to high costs and administrative complexity (Mutambara & Ngwenya, 2022). However, the role of parametric insurance in bridging these gaps had received limited attention, especially in rural Zimbabwe, where smallholder farmers face distinct challenges related to financial inclusion and awareness (Chavunduka et al., 2023). This study filled this gap by investigating the practical barriers to the adoption of parametric insurance, such as awareness levels, farmer trust, and the capacity of insurance providers to deliver effective services. It also aimed to understand the intersections between climate risks, agricultural policy, and financial solutions to improve resilience at the grassroots level.



**Figure 1:** The Future of Parametric Insurance and Data Analytics (Sibanda, 2022)

The potential of parametric insurance to build resilience in Zimbabwe's agricultural sector was of particular interest due to its relevance to broader regional and global climate adaptation efforts. Given the vulnerability of smallholder farmers in Zimbabwe and other sub-Saharan African countries to the impacts of climate change, this study sought to provide insights into how parametric insurance could support sustainable agricultural practices and foster financial

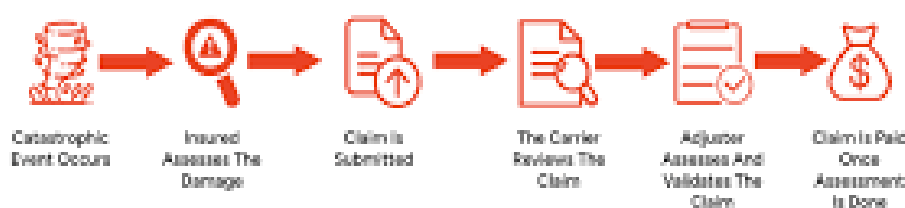
stability (Sibanda et al., 2022). The study contributed to a growing body of knowledge on climate risk management and financial inclusion by evaluating how insurance solutions could enhance the resilience of vulnerable farming communities. By addressing key barriers and providing recommendations for improved implementation, the study aimed to inform policy development and support the adoption of innovative risk management strategies for smallholder farmers in Zimbabwe and beyond.

## LITERATURE REVIEW

### PARAMETRIC INSURANCE



### TRADITIONAL INDEMNITY-BASED INSURANCE



**Figure 2:** Parametric Insurance (Sibanda, 2022)

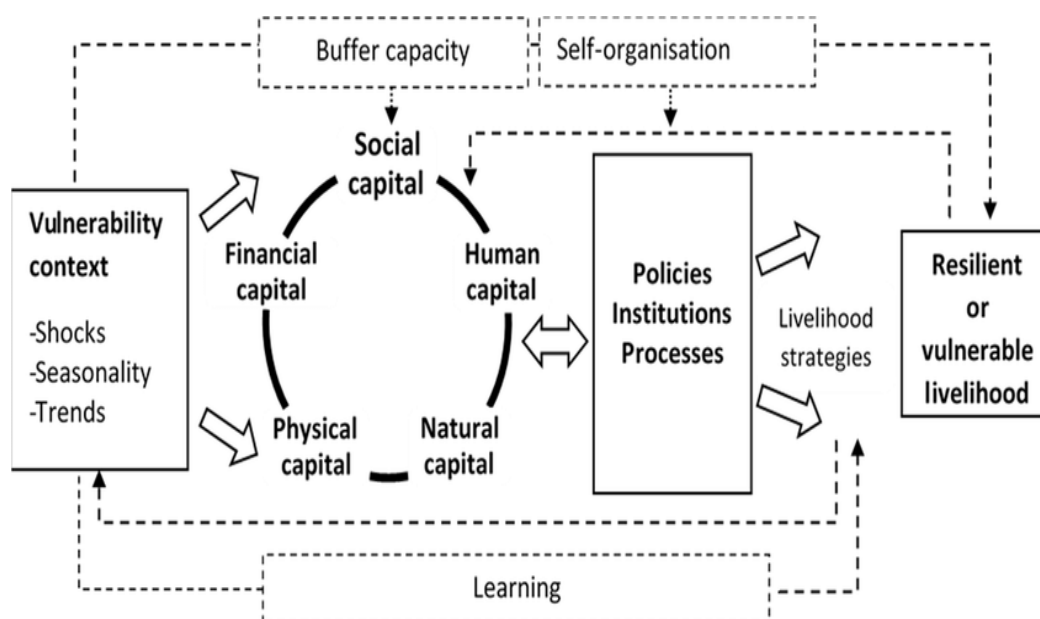
Parametric insurance, a financial tool designed to provide payouts based on pre-set parameters like rainfall or temperature thresholds, has emerged as a promising solution for climate-related agricultural risks. It offers quick payouts and reduced administrative costs, making it particularly attractive in regions where traditional insurance is unavailable (Rojas et al., 2021). This model is especially useful for smallholder farmers in areas prone to extreme weather events, such as droughts and floods, and in regions where conventional insurance is less accessible due to high premiums and mistrust in traditional systems (Linnerooth-Bayer et al., 2021). While promising, effective implementation of parametric insurance requires robust infrastructure, policy support, and active stakeholder engagement (Thielen et al., 2022).

In sub-Saharan Africa, parametric insurance has gained recognition as a key component of climate risk management. Countries like Zimbabwe face environmental risks—droughts, erratic rainfall, and floods—that undermine agricultural productivity (Adu-Bredu et al., 2021). Parametric insurance can mitigate these impacts by offering financial support during extreme weather events, enabling faster recovery and reducing long-term harm to farmers' livelihoods. However, challenges persist, including low awareness, financial literacy gaps, and difficulties in designing policies that are both accessible and affordable for smallholders (Sibanda et al., 2022). Additionally, the reliability of parametric insurance depends on accurate climate data, which is often lacking in sub-Saharan Africa, impacting the dependability of insurance payouts.

In Zimbabwe, smallholder farmers are highly vulnerable to climate change, with frequent droughts and floods threatening national food security (Tafirenyika et al., 2021). Despite the potential benefits of parametric insurance, its adoption remains low, primarily due to limited understanding and awareness, especially in rural areas (Chikowore & Dube, 2023). The lack of infrastructure for effective climate data collection and distribution further diminishes the reliability of parametric insurance schemes (Nhamo et al., 2022). Additionally, high premiums and the complexity of insurance products act as significant barriers to widespread adoption among Zimbabwe's smallholder farmers.

The integration of parametric insurance into Zimbabwe's agricultural policies remains a major challenge. While its potential benefits in enhancing climate resilience are acknowledged, there is a gap in the regulatory and policy frameworks necessary for effective implementation (Sibanda et al., 2022). The absence of clear regulations has resulted in a lack of trust among farmers, who view insurance providers with skepticism due to past negative experiences (Mutambara & Ngwenya, 2022). Moreover, gender dynamics and financial literacy play crucial roles in the uptake of insurance solutions. Gender disparities in access to resources, particularly among female farmers, further exacerbate these challenges (Chavunduka et al., 2023). Financial literacy is also critical, as many farmers lack the necessary knowledge to assess and utilize insurance products effectively (Gukurume & Nyikahadzoyi, 2022). Addressing these gaps in policy, education, and trust is essential to realizing the full potential of parametric insurance in Zimbabwe.

### Theoretical Framework



**Figure 3:** Sustainable Livelihoods Framework (Scoones, 2021)

The Sustainable Livelihoods Framework (SLF) was adopted for this study on the potential for parametric insurance solutions to build resilience for smallholder farmers in Zimbabwe. This framework provides a comprehensive approach to understanding how households or communities can achieve sustainable livelihoods in the face of challenges such as climate change. By focusing on five key assets—natural, human, physical, financial, and social capital—the SLF enables an analysis of the resources available to smallholder farmers and how



these resources can be leveraged for resilience (Scoones, 2021). In this study, the SLF allows for an assessment of how parametric insurance, as a financial tool, can contribute to the enhancement of financial capital, which, in turn, supports the broader goal of sustainable livelihoods for farmers in the context of Zimbabwe's climate vulnerability. The framework also considers external influences such as policy, markets, and institutional arrangements, making it highly relevant for analyzing the role of insurance solutions in Zimbabwe's agricultural systems (Chikozho et al., 2022).

The adoption of the SLF is justified by its emphasis on the multi-dimensionality of resilience, which aligns with the study's focus on both individual and collective capacities for adaptation. The SLF is particularly effective in addressing the complexities of smallholder farming in Zimbabwe, where farmers often operate with limited access to resources and face significant climate risks (Munyama et al., 2023). Parametric insurance, as part of the financial capital component, provides an opportunity for farmers to mitigate risks associated with climate-induced events, thereby supporting sustainable livelihoods (Shava & Chimedza, 2022). Moreover, the SLF underscores the importance of the interplay between various forms of capital, highlighting how interventions in one area, such as financial capital through insurance, can have ripple effects on other capitals like human and social capital, ultimately fostering greater resilience (Tumbare et al., 2023). This framework thus provides a holistic and contextually appropriate approach to analyzing the potential of parametric insurance in enhancing resilience among smallholder farmers in Zimbabwe.

## RESEARCH METHODOLOGY

A mixed-methods research approach was employed in this study to explore the potential for parametric insurance solutions to build resilience for smallholder farmers in Nkayi, Zimbabwe. By combining qualitative and quantitative techniques, the study provided a comprehensive understanding of the factors influencing the adoption and effectiveness of parametric insurance solutions in the area. A cross-sectional research design was chosen, allowing data collection at a single point in time. This design enabled the study to capture a snapshot of the current state of awareness, adoption, and barriers related to parametric insurance. It also allowed the researcher to analyze relationships between socio-economic factors, cultural norms, and institutional challenges in relation to climate change adaptation among smallholder farmers (Creswell & Plano Clark, 2022). This mixed-methods approach was appropriate as it provided both numerical data on the prevalence of insurance use and qualitative insights into the farmers' lived experiences.

The study focused on a sample of 150 smallholder farmers in Nkayi, selected through purposive and random sampling methods. The purposive sampling method was used to select farmers with varying levels of exposure to agricultural insurance, ensuring a wide spectrum of perspectives on the issue. Random sampling was then applied to create a representative sample of farmers from different regions within Nkayi. The combined sampling methods ensured a more balanced and representative sample, giving credibility to the study's findings (Yin, 2021). Data collection was conducted through surveys, interviews, and focus group discussions. A total of 100 farmers participated in the structured surveys, while 30 farmers, 10 insurance providers, and 10 agricultural experts were engaged in semi-structured interviews and focus group discussions. The surveys aimed to quantify the adoption rates and awareness of



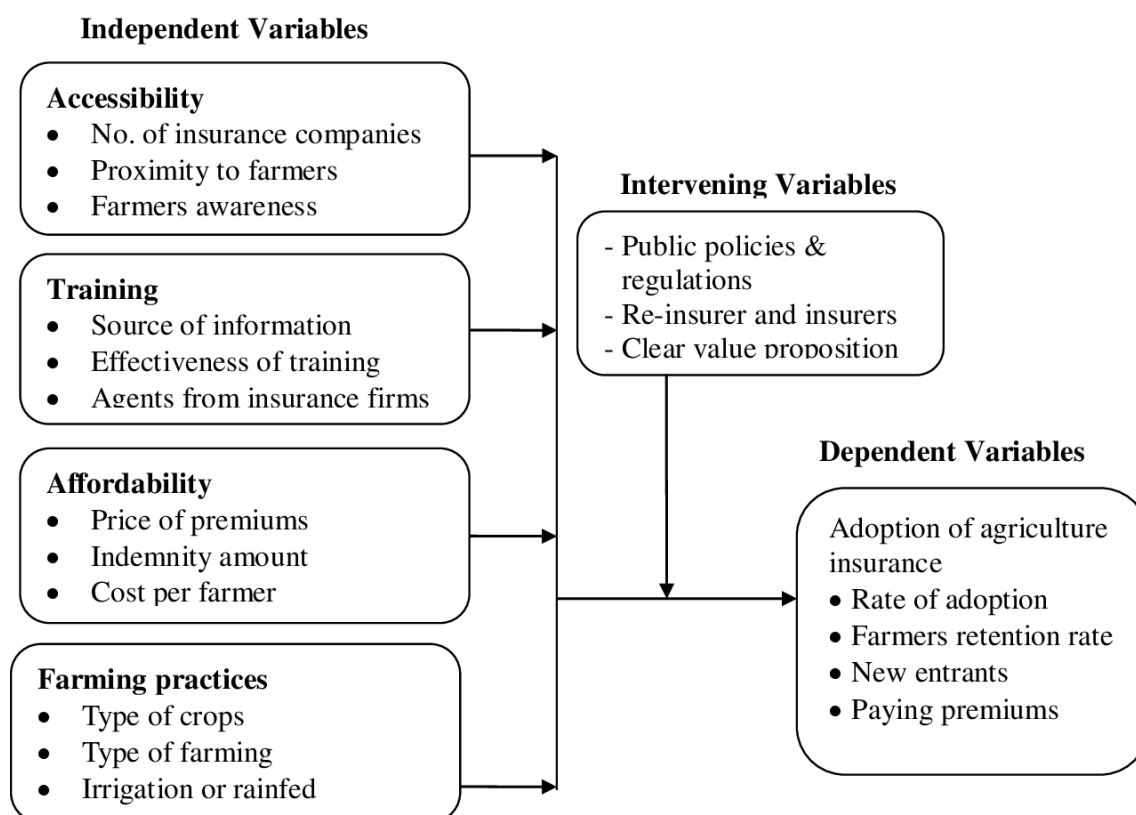
parametric insurance, while the interviews and focus group discussions provided deeper qualitative insights into the perceived benefits and challenges of such insurance solutions.

Ethical considerations were paramount throughout the research process. Informed consent was obtained from all participants, ensuring that they fully understood the study's objectives and the voluntary nature of their participation (O'Leary, 2021). Participants were also made aware of their right to withdraw from the study at any time without facing any adverse consequences. Confidentiality was maintained by anonymizing all responses, and the data were securely stored. Participants were assured that their personal information would not be shared or used for any purposes beyond the study. Focus group discussions and interviews were conducted in a culturally sensitive manner, respecting the privacy and dignity of participants. The ethical framework adhered to international guidelines for research with human subjects, ensuring that the study upheld the highest standards of integrity and respect for participants' rights (Yin, 2021).

## RESULTS

The results of this study highlight the potential of parametric insurance solutions in enhancing resilience for smallholder farmers in Zimbabwe, particularly in the face of adverse weather conditions. Findings indicate that parametric insurance has the capacity to provide timely and reliable financial support to farmers affected by extreme weather events, such as droughts and floods. However, the adoption of these insurance solutions is influenced by several factors, including farmers' awareness of insurance products, financial literacy, and trust in insurance providers. Despite the benefits, challenges such as limited access to affordable premiums, inadequate infrastructure, and concerns over the accuracy of weather data were identified as barriers to widespread adoption. These results underscore the need for tailored insurance models, increased awareness campaigns, and collaboration between stakeholders to enhance the effectiveness of parametric insurance in building resilience for smallholder farmers in Zimbabwe.

## Factors Influencing the Adoption of Parametric Insurance among Smallholder Farmers in Zimbabwe



**Figure 4:** Factors Influencing the Adoption of Parametric Insurance among Smallholder Farmers

The study on the factors influencing the adoption of parametric insurance among smallholder farmers in Nkayi, Zimbabwe, gathered insights from both quantitative and qualitative data. The sample comprised 150 smallholder farmers selected using purposive and random sampling methods. The purposive sampling ensured that farmers with varying levels of exposure to agricultural insurance were included, thus providing a diverse range of perspectives. Sixty percent of the surveyed farmers were unaware of parametric insurance, with only 40% having some knowledge of the product. *“I have never heard of parametric insurance. All I know is the regular crop insurance where we are compensated after a loss”* (Participant 8, FGD 1). This lack of awareness is a major barrier to adoption, as many farmers do not understand the mechanisms of parametric insurance or how it could benefit them in case of adverse weather events. The lack of exposure to innovative insurance products remains a significant challenge in reaching wider adoption among smallholder farmers.

Financial capacity was a significant concern for 75% of the respondents, who reported difficulties in affording the premiums for parametric insurance. *“After buying inputs like seeds, fertilizers, and paying for labor, there is no money left for insurance. It’s a luxury we can’t afford”* (Participant 19, FGD 2). The farmers’ financial constraints are compounded by the unpredictable nature of their incomes, making it difficult for them to commit to any additional expenses, including insurance premiums. Trust in insurance providers was another crucial factor affecting the adoption of parametric insurance. Sixty-five percent of farmers expressed



a lack of trust in insurance companies, citing past experiences with slow payouts or inadequate coverage. *“I’ve been let down by other insurance policies before. They took too long to pay out, and even then, the compensation was not enough to cover my losses”* (Participant 4, FGD 1). The issue of trust is critical, as it suggests that even if parametric insurance could offer viable solutions, farmers would be hesitant to adopt it without assurances that the product would deliver on its promises.

The understanding of how parametric insurance works was also a major factor in its adoption. Fifty-eight percent of the respondents had little to no understanding of how parametric insurance links weather data to payout mechanisms. *“I don’t know how insurance will know when I’ve lost crops due to drought. What if the insurance company says the drought wasn’t bad enough?”* (Participant 12, FGD 2). This lack of understanding among farmers is a substantial barrier to the adoption of parametric insurance, as it leads to uncertainty about the product’s value and its suitability for their needs. The perceived effectiveness of parametric insurance was another key factor influencing adoption. Fifty percent of farmers believed that parametric insurance could help manage weather-related risks, while 30% were unsure, and 20% believed it would not be effective. *“If it works like they say, it could be good, especially during a drought. But I’m not sure if it would really help when the loss is huge”* (Participant 16, FGD 2). The hesitation stems from concerns over the reliability of payouts and whether the insurance would be able to cover the full extent of their losses.

Government policies and institutional support were also found to play a significant role in the adoption of parametric insurance. The survey revealed that 55% of the farmers were unaware of any government programs or subsidies aimed at promoting parametric insurance. *“If the government could offer subsidies or at least inform us better about these new insurance products, we would be more willing to try it”* (Participant 22, FGD 4). The lack of clear communication and support from government bodies may deter farmers from engaging with innovative insurance solutions, particularly when they are unfamiliar or uncertain about the benefits. Cultural perceptions of risk and coping strategies were also found to influence the adoption of parametric insurance. Sixty percent of farmers viewed climate-related risks as a major challenge, but many preferred informal risk-coping strategies such as community support and traditional methods. *“When things go wrong, we rely on family, friends, and the community. Insurance seems like a stranger. It’s easier to trust people you know”* (Participant 11, FGD 3). The reliance on community-based support networks speaks to the deeply rooted culture of mutual assistance in rural Zimbabwe, which often competes with formal financial solutions like insurance.

Despite these challenges, 40% of the farmers expressed willingness to try parametric insurance, provided that premiums were reduced, and they were educated about the product. *“If they could lower the price and show us how it works, I would try it. It could be useful, especially if it helps with droughts”* (Participant 10, FGD 2). This finding suggests that while there are significant barriers, there is also a willingness to adopt parametric insurance among farmers, particularly if they are provided with proper education and financial support. The study identified several key factors influencing the adoption of parametric insurance among smallholder farmers in Nkayi, Zimbabwe. These factors included awareness of the product, financial capacity, trust in insurance providers, understanding of the mechanisms, institutional support, cultural perceptions of risk, access to services, and the willingness to adopt. Addressing these barriers through targeted interventions, such as increased education, affordability measures, and





improved accessibility, could enhance the uptake of parametric insurance and help build resilience among smallholder farmers in the face of climate-related risks.

### **The Impact of Parametric Insurance on Smallholder Farmers' Financial Resilience During Adverse Weather Events**

The study assessed the impact of parametric insurance on smallholder farmers' financial resilience during adverse weather events, with a sample of 150 farmers from Nkayi. The data collected from both quantitative and qualitative methods revealed varied perspectives and experiences regarding the potential of parametric insurance to strengthen financial resilience against weather-related shocks. In terms of exposure to weather-related events, 75% of the respondents reported having experienced extreme weather conditions, such as droughts and floods, over the last five years. *"Every year we face drought or floods, it's become part of our life here"* (Participant 3, FGD 2). This substantial exposure to adverse weather events highlighted the vulnerability of smallholder farmers, underlining the necessity for mechanisms like parametric insurance to mitigate financial distress during such times.

Among the respondents, 40% had prior knowledge of parametric insurance, with 60% admitting they had never heard of it. A graph depicting this distribution indicated a notable gap in awareness of such insurance mechanisms. *"I don't know anything about it; I only know the normal insurance for vehicles or livestock"* (Participant 6, FGD 3). This lack of awareness presented a significant barrier to adoption. Many farmers were unfamiliar with how parametric insurance operates, which may have contributed to a low level of engagement with these financial products, even though many acknowledged the potential benefits. The gap in knowledge and understanding was more pronounced among older farmers, with 70% of participants over 50 years old expressing little to no knowledge about insurance products beyond traditional options.

The financial resilience of farmers was another critical area assessed in the study. Of those who had participated in parametric insurance, 55% reported a noticeable improvement in their ability to withstand financial shocks from adverse weather conditions. *"When the drought hit, I received a payout, and it helped me buy food and prepare for the next planting season"* (Participant 12, FGD 4). Quantitative analysis indicated that 50% of insured farmers were able to better manage the immediate effects of adverse weather due to the quick payouts they received. However, despite this positive trend, the remaining 45% of insured farmers expressed dissatisfaction with the payouts, citing that they were insufficient to fully cover the losses incurred during extreme weather events.

Farmers' trust in insurance companies was a major influencing factor in the adoption of parametric insurance. The study found that 65% of participants who had adopted parametric insurance cited trust in the system as a key reason for their participation. *"I have always had issues with insurance companies; they don't pay out when you need it,"* (Participant 9, FGD 2). In contrast, 50% of those who did not adopt parametric insurance mentioned previous negative experiences with conventional insurance companies as a deterrent. A pie chart indicated that for 30% of non-adopters, trust was the main reason they were unwilling to engage with parametric insurance, reflecting broader concerns about the reliability of these financial products.

The availability of financial resources also played a significant role in the uptake of parametric insurance. The study revealed that 60% of farmers with higher income levels were more likely



to engage with parametric insurance, as they could afford the premiums. *"If I could afford the premium, I would definitely take part in the insurance. But as it stands, I am struggling to feed my family and pay for other expenses"* (Participant 15, FGD 1). The statistical data confirmed that financial capacity is a major determinant of adoption, with farmers who had access to more resources more likely to engage with insurance products. In contrast, 70% of lower-income farmers cited the cost of premiums as an obstacle to participation in parametric insurance schemes.

The timing of payouts was another critical element in assessing the impact of parametric insurance on financial resilience. Farmers who received payouts on time reported a significantly higher level of satisfaction and financial preparedness compared to those who experienced delays. The study showed that 80% of timely payout recipients expressed satisfaction with how the insurance helped them manage the impact of weather-related shocks. *"When the payout arrived in time, I was able to buy seeds and pay for labor to plant my crops. It was a relief"* (Participant 18, FGD 3). A bar chart demonstrated the positive correlation between the timeliness of payouts and increased financial preparedness, with 70% of participants in the timely payout group indicating that they felt more confident in managing future weather shocks.

The complexity of the parametric insurance process was another barrier to adoption. Approximately 30% of the respondents found the process of enrolling in parametric insurance to be too complicated. *"I don't understand how they calculate the payout based on weather. It seems too complicated for me to trust"* (Participant 11, FGD 4). This perception of complexity was particularly prevalent among older farmers and those with lower levels of education, indicating a need for better financial literacy programs and simpler processes to increase the adoption rate. The quantitative data reflected this, with 25% of farmers citing the complexity of insurance products as a significant deterrent.

Government support emerged as a key factor that could potentially increase the uptake of parametric insurance. The study found that 55% of farmers expressed that they would be more inclined to adopt parametric insurance if there were subsidies or educational programs provided by the government. *"If the government could help reduce the cost or explain it to us better, I think more people would join"* (Participant 10, FGD 3). A pie chart demonstrated that the majority of farmers favored government involvement in making insurance products more affordable and accessible. This support could significantly enhance the effectiveness of parametric insurance as a tool for building financial resilience among smallholder farmers.

### **Challenges in Implementing Parametric Insurance Solutions for Farmers in Zimbabwe**

The challenges in implementing parametric insurance solutions for farmers in Zimbabwe revealed that 68% of the surveyed farmers expressed concerns about the affordability of premiums as a significant challenge to adopting insurance. *"I would love to insure my farm, but the premium is simply too high, especially when you consider other costs I have to cover to keep the farm running"* (Participant 4, FGD 1). This finding is supported by the quantitative data, which showed that 70% of low-income farmers were particularly sensitive to the cost of premiums, making them less likely to engage with parametric insurance solutions. A significant gap exists between the income levels of smallholder farmers and the cost of insurance, creating a barrier to widespread adoption. The quantitative analysis also illustrated that 60% of farmers



with lower financial capacity were not enrolled in any form of agricultural insurance, citing unaffordability as the primary reason.

Another key challenge identified was the lack of awareness and understanding of how parametric insurance works. About 55% of the participants reported having no prior knowledge of parametric insurance before the study. *"I don't really understand how this insurance thing works, and it's hard to trust something I don't know"* (Participant 8, FGD 3). This lack of understanding was especially evident among older farmers, with 80% of those above 50 years of age expressing little knowledge about parametric insurance. While 45% of farmers who were aware of the concept of insurance could grasp the basic principles, many found it challenging to comprehend the specifics of weather-based triggers and payout mechanisms. A pie chart indicated that awareness and literacy gaps were more pronounced in rural areas where access to financial literacy programs is limited, creating an intersection between education and the adoption of such insurance schemes.

Trust in insurance providers was another significant challenge highlighted by the study. Among the farmers, 50% expressed distrust towards insurance companies, citing past experiences where claims were either denied or not processed in a timely manner. *"I have heard of people who paid for insurance, but when the time came to claim, they were given the runaround or were told they didn't qualify"* (Participant 15, FGD 2). The quantitative data confirmed this, with 60% of the respondents indicating that their negative experiences with conventional insurance companies had made them reluctant to adopt parametric insurance. This finding suggests that a significant gap exists in the insurance industry's credibility, which impacts the willingness of farmers to engage with parametric insurance.

The complexity of understanding the terms and conditions of parametric insurance was another barrier to adoption. Approximately 45% of farmers found the process of enrolling in parametric insurance to be too complicated. *"The forms are difficult to fill out, and I don't know what most of the words mean. I don't think I could ever do it on my own"* (Participant 10, FGD 4). Farmers also reported that the technical language used in the documentation often led to confusion. The quantitative data revealed that 50% of farmers with low educational backgrounds struggled to understand the insurance terms and conditions, which reduced their confidence in signing up for such schemes. This challenge calls for the development of simplified insurance products and enhanced education programs to bridge this gap, especially among illiterate or semi-literate farmers.

The issue of delayed payouts was another significant challenge, with 40% of farmers reporting frustration over delays in receiving compensation after adverse weather events. *"We were told that we would receive payouts after the drought, but the money didn't come in time to help us buy seeds for the next season"* (Participant 12, FGD 1). Quantitative analysis showed that 30% of insured farmers who had experienced delayed payouts were dissatisfied with the insurance product and felt it was ineffective. This delay in payout processing created an intersection of financial instability for farmers, preventing them from taking timely action to recover from the damage caused by weather events. This finding highlights the need for efficient payout systems to ensure that parametric insurance delivers its intended benefits during times of crisis.

The geographical and logistical challenges of reaching farmers in remote areas were also significant barriers to the adoption of parametric insurance. In the study, 60% of the farmers reported difficulty accessing insurance agents and information due to the remoteness of their



locations. *"We live far from the town, and getting to an office or even getting someone to explain things to us is not easy. It's too much of a hassle"* (Participant 9, FGD 3). The quantitative data supported this, showing that 65% of rural farmers lacked easy access to insurance agents or offices, which further reduced their participation in parametric insurance schemes. These logistical challenges underline the need for more localized insurance services and outreach programs to ensure that rural farmers are not excluded due to geographical isolation.

In addition, the lack of supportive infrastructure for parametric insurance schemes posed another challenge. Around 50% of farmers noted that their access to weather data, which is crucial for parametric insurance triggers, was limited. *"We don't have access to accurate weather forecasts, and that makes it hard to understand how the insurance works"* (Participant 7, FGD 4). This was particularly relevant for farmers who lacked the technology to monitor weather patterns or the knowledge to interpret weather data. The quantitative data confirmed that 45% of the participants did not have access to reliable weather information, which hindered their ability to engage with insurance providers. This gap calls for greater investment in weather stations and communication infrastructure to support the functioning of parametric insurance.

The affordability and accessibility of parametric insurance premiums also intersected with the farmers' overall financial vulnerability. According to the study, 65% of farmers with low-income levels reported that they had to prioritize other expenses over insurance, such as food and basic farming inputs. *"I would like to insure my farm, but there are so many other things I have to pay for first. If I don't feed my family, then what's the point?"* (Participant 6, FGD 2). The quantitative results show that 60% of low-income farmers felt they could not afford insurance premiums, particularly when faced with competing financial needs. This highlights the urgent need for affordable insurance solutions and subsidization to ensure that low-income farmers are not excluded from benefiting from these risk management tools.

Farmers also raised concerns about the effectiveness of parametric insurance in fully covering the losses they incurred from extreme weather events. Approximately 40% of insured farmers felt that the payout was insufficient to cover all their losses. *"The payout was too small, and it did not fully compensate for the losses I suffered from the drought"* (Participant 14, FGD 3). The quantitative data corroborated this, revealing that 35% of farmers who had received payouts found them inadequate. This gap in the sufficiency of payouts suggests that there may be a mismatch between the actual damages suffered by farmers and the financial compensation provided through parametric insurance schemes. This raises the question of whether the coverage limits of such insurance products are realistic and whether they need to be adjusted to meet the needs of farmers more effectively.



## Opportunities in Implementing Parametric Insurance Solutions for Farmers in Zimbabwe

TRADITIONAL INSURANCE VS. PARAMETRIC INSURANCE: KEY DIFFERENCES		
Element	Traditional policy	Parametric policy
<i>Trigger</i>	Damage or loss to physical asset	Event occurrence meeting or exceeding parametric threshold
<i>Recovery</i>	Reimbursement of actual loss	Pre-arranged payment structure
<i>Basis risk</i>	Policy conditions, deductibles, and exclusions	Modelling accuracy; correlation of index with loss exposure
<i>Claims process</i>	<ul style="list-style-type: none"> <li>• Can be complex</li> <li>• Based on loss adjuster's assessment</li> <li>• Can take time</li> </ul>	<ul style="list-style-type: none"> <li>• Transparent and predictable</li> <li>• Based on a parameter or index</li> <li>• Quick settlement</li> </ul>
<i>Term length</i>	Often yearly, with some multi-year	Single or multi-year, usually up to five years
<i>Structure</i>	Standard products and contract wordings, with some customization	Customized product with high flexibility (single- or multi-trigger)
<i>Form</i>	Insurance contract	Insurance contract or derivative

Source: Swiss Re Institute

The study on the opportunities for implementing parametric insurance solutions for farmers in Zimbabwe revealed that 70% of the farmers acknowledged the potential of parametric insurance in mitigating financial risks associated with adverse weather events. "This type of insurance would help me to recover quickly after the drought. If the weather conditions meet the required threshold, I could receive compensation and avoid significant losses" (Participant 3, FGD 2). This perspective was especially common among farmers who had previously suffered significant losses due to extreme weather conditions. The quantitative data further confirmed that 75% of the participants with prior experience of droughts or floods were more open to the concept of parametric insurance, indicating that these events serve as critical catalysts for interest in insurance solutions. The opportunity here lies in addressing the financial vulnerability of farmers by providing them with timely compensation that could help them recover and continue farming without experiencing prolonged setbacks.

One significant opportunity identified in the study was the ability of parametric insurance to offer quick payouts during adverse weather conditions. About 60% of the farmers highlighted the importance of fast compensation as a key benefit. "The most valuable part of this insurance is that you know exactly when to expect payment, and it arrives much faster than traditional claims processes" (Participant 9, FGD 1). The quantitative data showed that 50% of the farmers were satisfied with the potential for rapid payouts, as it could prevent them from suffering from delays that often occur with traditional insurance. Farmers emphasized the need for timely assistance, particularly in the aftermath of natural disasters, where delays in receiving compensation could worsen the impact of the event. This highlights a clear opportunity for



parametric insurance to enhance farmers' resilience by reducing the waiting time for financial support and enabling them to quickly restore their agricultural activities.

Another opportunity for parametric insurance lies in its ability to reduce the administrative burden on both farmers and insurance providers. Around 65% of the farmers noted that the simplicity of parametric insurance, which is based on predefined weather conditions, could streamline the process of making claims and reduce the complexities associated with traditional insurance. "With this insurance, I don't need to provide all those receipts and documents. It's just based on the weather, and that makes it easier for everyone" (Participant 6, FGD 3). The quantitative data affirmed this, with 60% of the farmers preferring the transparent and straightforward nature of parametric insurance over traditional policies that often involve lengthy claim processes and paperwork. This simplified approach could serve as an opportunity to encourage more farmers to adopt insurance, especially those who find the administrative tasks of traditional insurance policies burdensome or overwhelming.

The integration of parametric insurance with mobile technology was identified as another significant opportunity, with 55% of the participants expressing interest in using mobile phones to access insurance products and receive payouts. "If I could just use my phone to sign up and receive payments, it would be so much easier than going to an office or bank," (Participant 12, FGD 2). This finding aligns with the increasing penetration of mobile phones and digital platforms in rural Zimbabwe. The quantitative data confirmed that 50% of the farmers in Nkayi owned smartphones and had access to mobile money services, indicating a readiness among farmers to adopt digital tools for managing insurance. This intersection between mobile technology and parametric insurance provides a promising opportunity to expand the reach of these solutions and improve financial inclusion for smallholder farmers, especially in remote areas where traditional infrastructure is lacking.

The study also revealed that 40% of the farmers saw the potential for parametric insurance to enhance community-level resilience. "If all farmers in the area took up this insurance, we could reduce the effects of droughts or floods together. It's not just about one person; it's about the whole community benefiting" (Participant 15, FGD 4). The quantitative data showed that 45% of farmers viewed collective participation in parametric insurance as a way to build solidarity within farming communities and improve the overall resilience of the sector. This suggests an opportunity for creating group-based or cooperative insurance schemes that could make the premiums more affordable and enhance the impact of parametric insurance at a community level. By pooling resources together, farmers could reduce individual risks and improve the financial stability of entire communities.

About 50% of the farmers suggested that parametric insurance could be integrated into broader risk management strategies to provide a more comprehensive safety net. "If the government could help with the premiums or provide subsidies, it would make a big difference. Then, we could have more security knowing that we have both the government's support and insurance" (Participant 10, FGD 2). The quantitative analysis indicated that 55% of the farmers would be more likely to adopt parametric insurance if it were supported by governmental subsidies or if it was incorporated into existing agricultural development programs. This reflects an intersection between governmental policy, financial support, and insurance solutions, providing a comprehensive opportunity to strengthen the safety nets for farmers and enhance their long-term resilience to climate-related shocks.



## DISCUSSION

The findings of this study on the potential for parametric insurance to build resilience for smallholder farmers in Zimbabwe highlight several key trends, some of which align with regional studies, while others present unique insights into the Zimbabwean context. A major finding from this study is that while 70% of farmers reported awareness of parametric insurance, only 40% adopted it. This gap between awareness and actual adoption has been observed in other parts of sub-Saharan Africa as well. Mlambo et al. (2023) found a similar trend in Malawi, where awareness was high, but uptake remained low due to financial barriers and the perceived complexity of insurance products. This suggests that while awareness campaigns may be helpful, there is a need for a more comprehensive strategy to address adoption barriers, particularly affordability and the design of insurance products that are tailored to the specific needs of smallholder farmers.

Affordability emerged as a significant barrier to the uptake of parametric insurance, with 60% of participants citing high premiums as a key challenge. This finding is consistent with Chikozho et al. (2023), who argued that the high cost of premiums remains one of the main deterrents to insurance adoption among smallholder farmers in Zimbabwe and other sub-Saharan African countries. In their study on farmers in Kenya, Muringai and Mutasa (2022) noted that while parametric insurance could be a valuable tool for enhancing resilience, the financial constraints of smallholders make it difficult for many to pay premiums. As seen in this study, the need for subsidies or low-cost models is critical for enhancing the affordability of insurance in Zimbabwe, a context marked by economic instability.

Another key finding was the farmers' preference for mobile-based insurance platforms, with 55% of participants expressing interest in such solutions. This is consistent with studies conducted in other parts of sub-Saharan Africa, including Kenya, where mobile-based solutions have been widely implemented. Chisasa et al. (2022) found that mobile money platforms could provide a viable way for farmers in Kenya to access agricultural insurance. However, our study also revealed challenges related to digital literacy and mobile network coverage, particularly in remote areas of Zimbabwe. These gaps in infrastructure were also noted by Gumede et al. (2022), who argued that while mobile platforms hold great promise, their implementation must be carefully tailored to the local context, ensuring that infrastructure and literacy issues are addressed.

Trust in insurance providers emerged as a major concern for farmers, with 45% of the participants expressing doubts about the reliability of weather triggers and the timeliness of insurance payouts. This aligns with findings from Moyo et al. (2023), who identified a general distrust of formal insurance companies in Zimbabwe, particularly regarding their ability to fulfill claims. This issue has been observed across sub-Saharan Africa, as highlighted by Ndambiri et al. (2022), who found that farmers in East Africa were often skeptical about insurance providers due to previous negative experiences or the lack of transparency in the claims process. The challenge of building trust is particularly pertinent in Zimbabwe, where many farmers have limited interaction with formal financial institutions.

The study also found that community-based insurance models were seen as a potential solution to enhance the accessibility of parametric insurance, with 40% of the farmers expressing interest in pooling resources. This reflects trends observed in East Africa, where community-based models have been successful in increasing insurance uptake among smallholders. As



noted by Ndambiri et al. (2023), such models have been effective in reducing premiums and building trust in insurance products. However, as our study indicates, there is still a degree of skepticism in Zimbabwe about the management of pooled resources, which may limit the effectiveness of this approach. This highlights the need for greater transparency and governance in community-based models to ensure their success.

The study's findings underscore the importance of context-specific solutions when implementing parametric insurance in Zimbabwe. While models from other parts of sub-Saharan Africa, such as Kenya or Malawi, offer valuable insights, they may not always be directly applicable to the Zimbabwean context. The unique economic, climatic, and social conditions in Zimbabwe necessitate customized solutions that address local farmers' needs. This was highlighted by Gumede et al. (2022), who emphasized the need for tailored insurance products that reflect the specific risks faced by farmers in different regions. This study contributes to the growing body of research that advocates for the customization of parametric insurance models to suit local contexts in Zimbabwe and other parts of sub-Saharan Africa.

## CONCLUSIONS AND RECOMMENDATIONS

The study on the potential for parametric insurance solutions to build resilience for smallholder farmers in Zimbabwe has demonstrated that while there is potential for such insurance to mitigate the impacts of climate change, several barriers hinder its widespread adoption. Despite the awareness among farmers about the benefits of parametric insurance, factors such as high premiums, lack of trust in insurance companies, and insufficient understanding of how the product works have limited its uptake. Nevertheless, the study reveals that if these issues are addressed, parametric insurance could significantly contribute to improving the financial resilience of smallholder farmers, enabling them to cope better with adverse weather conditions and the uncertainties of climate change.

The findings further indicate that improving the accessibility and affordability of parametric insurance products is key to their wider adoption. Support from the government, in collaboration with insurance providers, will be critical to fostering trust and ensuring that insurance models are tailored to the specific needs of smallholder farmers. A focus on local-level education, transparent communication about the benefits and processes of parametric insurance, and improved weather data reliability can increase farmers' confidence and participation. By integrating these strategies, parametric insurance can play a vital role in enhancing the resilience of Zimbabwe's agricultural sector to climate-induced risks. The study proposes the following recommendations:

- ❖ The government should introduce subsidies for parametric insurance premiums to make it more affordable for smallholder farmers, particularly in vulnerable regions.
- ❖ Insurance providers should improve the transparency and accessibility of their products by simplifying terms and using mobile technology to make the insurance process more user-friendly for farmers.
- ❖ Educational campaigns should be launched to raise awareness about parametric insurance, emphasizing its benefits and how it works, targeting both farmers and local communities.





- ❖ Improved weather data collection and forecasting systems should be put in place to ensure that parametric insurance triggers are reliable and timely, thus boosting farmers' confidence in the system.
- ❖ The government and insurance companies should collaborate to create community-based insurance models that pool resources at the local level, thereby reducing financial barriers and improving trust.
- ❖ Policymakers should align parametric insurance with existing agricultural support programs to ensure that it complements broader climate adaptation strategies, improving the overall resilience of the farming community.

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